Mobility Workshop 2012: Workshop Goals and Mobility Program Overview

Research and Innovative Technology Administration, ITS Joint Program Office

Mobility Workshop 2012
National Harbor, MD

May 24, 2012
Overview

- Welcome

- Workshop:
  - Goals
  - Agenda
  - Materials

- Mobility Program Overview
  - Background
  - Roadmap
  - Recent Accomplishments
  - Near-Term Program Milestones
  - Role of the Basic Safety Message (BSM)
  - Opportunities to Participate
Welcome
Workshop Goals

- INFORM stakeholders on schedule, projects, procurements and products
- CONFIRM stakeholder concurrence on Mobility Program direction
- MOTIVATE stakeholder utilization of program products, participation in upcoming procurements
- CAPTURE stakeholder feedback on targeted cross-cutting issues regarding application development, testing, and deployment
This Morning: Program Background and Status

- Our chance to update you on what is happening in the Mobility Program:
  - Accomplishments
  - Near term milestones

- Key Topics
  - Mobility Program Overview
  - Data Capture and Management Program
  - Dynamic Mobility Applications Program
  - DMA Application Bundle Concepts

- Detailed agenda provided in your participant booklet
This Afternoon: Providing Feedback

▪ Your chance to provide us with feedback on issues and program direction

▪ Mobility breakout exercises
  ▪ Structured feedback sessions
  ▪ Each breakout session:
    ▪ Runs 2 hours 45 minutes - 1:30 PM to 4:15 PM
    ▪ 15 minute break from 2:45 to 3:00 PM
  ▪ Pick 1 session to attend from four topics
    ▪ Near-Term Testing Concepts
    ▪ Cross-cutting Data and Communications Needs
    ▪ Implementing Open Data and Open Source Concepts in the RDE and OSADP
    ▪ Bundle Deployment Feasibility: Assumptions, Impacts, and Risks

▪ Wrap-Up/Workshop Summary
  ▪ You can hear about the breakouts that you did not participate in
Participant Resource Materials

- Everyone should have received a participant booklet:
  - Detailed agenda
  - Descriptions of the application bundles

- You will receive additional materials in the breakout sessions
Attendees

- Interest in this workshop reflects growing interest in the Mobility program
  - Too large a group for individual introductions, unstructured breakout exercise activities

- 80+ registered attendees:
  - Public sector
    - Federal, regional, state, and local agencies
    - Universities
  - Private sector firms in a wide range of interests
    - Technology vendors
    - System integrators
    - Consultants
    - Telecommunication companies
    - Auto manufacturers
ITS Research = Multimodal and Connected

To Improve Safety, Mobility and Environment

Research of technologies and applications that use wireless communications to provide connectivity:

- Among vehicles of all types
- Between vehicles and roadway infrastructure
- Among vehicles, infrastructure and wireless consumer devices

FCC Allocated Spectrum at 5.9 GHz for Transportation Safety (known as DSRC)
Major Objectives

- Move aggressively on vehicle to vehicle communications
  - Regulatory Decision on In-Vehicle Equipment by 2013
- Accelerate in-vehicle technology
  - Basic Safety Messaging
  - Aftermarket Safety Systems
  - Enables safety and active traffic management
- Accelerate infrastructure communications capability
  - Signal Phase and Timing (SPaT) as initial focus
  - Enables safety, mobility, and environmental applications
- Multi-modal pilot deployments for high-value applications
- Monitor and evaluate driver distraction issues
- Understand data and communications needs (DSRC/other) of transformative mobility applications – and the potential benefits of these applications
ITS Research Program Components

Applications
- Safety
  - V2V
  - V2I
  - Safety Pilot
- Mobility
  - Real Time Data Capture & Management
  - Dynamic Mobility Applications
- Environment
  - AERIS
  - Road Weather Applications

Technology
- Harmonization of International Standards & Architecture
- Human Factors
- Systems Engineering
- Certification
- Test Environments

Policy
- Deployment Scenarios
- Financing & Investment Models
- Operations & Governance
- Institutional Issues
Mobility Program

Real-time Data Capture and Management

- Vehicle Status Data
- Infrastructure Status Data
- Weather Data
- Truck Data
- Transit Data

Data Environment

Dynamic Mobility Applications

- Reduce Speed 35 MPH
- Transit Signal Priority
- Weather Application
- Real-Time Travel Info
- Fleet Management/Dynamic Route Guidance
- Signal Phase & Timing Adjusts Real-Time Conditions
- Safety Alerts and Warnings
Mobility Program: Recent Accomplishments

- **Organizing and Utilizing Connected Vehicle Data**
  - Prototype Research Data Exchange now live

- **Defining, Prototyping and Testing Applications**
  - Application Bundle Concepts of Operations/Operational Concepts
    - EnableATIS Operational Concept (completed)
    - INFLO, IDTO, FRATIS ConOps (completed)

- **Real-World Application Demonstrations**
  - Initiated coordination activity to obtain data from Safety Pilot Model Deployment

- **BSM Assessment**
  - Developed BSM Assessment (version 1) white paper

- **Mobility Benefits Evaluations**
  - Defined four key mobility measures

- **Stakeholder Engagement**
  - Summer webinar series 2011
  - Bundle workshops
Mobility Program: Near Term Milestones

- **Organizing and Utilizing Connected Vehicle Data**
  - Safety Pilot data
  - BSM demonstration data
  - RDE Update 1 – Late 2012

- **Defining, Prototyping and Testing Applications**
  - Prototype Open Source Portal goes live – Fall 2012
  - Complete Bundle ConOps (R.E.S.C.U.M.E and M-ISIG)
  - Develop Ph. 2 Integrated Research Plan – Summer 2012
    - Small Scale Field Tests
    - Simulation Studies

- **Real-World Application Demonstrations**
  - Safety Pilot Model Deployment

- **BSM Assessment**
  - BSM Assessment paper updates

- **Mobility Benefits Evaluations**
  - Refine tools and conduct application impact assessment
Key Research Questions for the Mobility Program

- What are the benefits of applications enabled by connected vehicle and connected traveler data?

- What testing is required to prepare applications for eventual demonstration and deployment?

- What are the cross-cutting data and communication needs among DMA bundles?

- What is the role of Basic Safety Message (BSM)?

- How do we successfully implement Open Data and Open Source concepts within the program?
Basic Safety Message (BSM) Fundamentals

- Connected V2V safety applications are built around the BSM, which has two parts
  - BSM Part 1:
    - Contains the core data elements (vehicle size, position, speed, heading acceleration, brake system status)
    - Transmitted approximately 10x per second
  - BSM Part 2:
    - Added to part 1 depending upon events (e.g., ABS activated)
    - Contains a variable set of data elements drawn from many optional data elements (availability by vehicle model varies)
    - Transmitted less frequently
- No on-vehicle BSM storage of BSM data
- The BSM is transmitted over DSRC (range ~1,000 meters)

- The BSM is tailored for low latency, localized broadcast required by V2V safety applications
Mobility Programs: BSM Assessment Activity

- Assess the extent to which the BSM supports or enables mobility applications
  - To what degree is a DSRC-based BSM Part 1 message critical to realizing transformative benefits from mobility applications?
  - What key elements of BSM Part 2 or other vehicle-based data might be needed? Where and how often?
  - Can other messages tailored for cellular communication augment a DSRC-based BSM?

- As we add data from mobile devices and fixed sensors, how much improvement do we see in application effectiveness?
Data Question

Basic Safety Message 1 & 2 via DSRC, at a regular interval via cellular

Basic Safety Message 1 & 2+, at a regular interval via cellular

Even more mobility and environmental services

More mobility and environmental services

Mobility and environmental services
Your feedback today

- Participate in the breakout sessions to provide feedback on:
  - Prioritization of near-term test concepts
  - Mobility application data and communications needs
  - Governance and licensing approaches for data and source code released by the Mobility Program
  - Feasibility of bundle deployments in the next 10 years:
    - market penetrations of various forms of wirelessly-enabled vehicles and personal communication devices
    - performance measures and transformative targets
    - deployment risks by application bundle
Other ways to get involved

- Become a stakeholder
  - RDE Stakeholder Workshop: June 2012
  - DMA Bundle Workshops

- Respond to upcoming procurements
  - Bundle application prototyping and testing procurements
  - Evaluation tool enhancement and impacts assessment
Questions?